

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF NEW YORK

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Rosco, Inc.,

CV-96-5658 (CPS)

Plaintiff,

-against-

MEMORANDUM
OPINION AND
ORDER

Mirror Lite Company,

Defendant.

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SIFTON, Senior Judge.

Plaintiff, Rosco, Inc., commenced this action, in 1996, against defendant, Mirror Lite Company, asserting claims of design patent infringement, trade dress infringement, false designation of origin, tortious interference with business relationships, misrepresentation in violation of 15 U.S.C. § 1125(a), and common law trademark infringement. In addition to damages, the complaint sought declaratory and injunctive relief pursuant to 29 U.S.C. §§ 2201 and 2202. Mirror Lite asserted a counterclaim of patent infringement in violation of 15 U.S.C. § 1125(a).

The matter was tried before the undersigned sitting without a jury between March 6 and March 10, 2000. After appeal to the Federal Circuit and remand for determination of infringement, I found that Rosco had infringed Mirror Lite's '984 patent. The parties then filed cross motions for summary judgment on the issue of whether Rosco's post trial mirrors continued to infringe

Mirror Lite's patent. I granted Mirror Lite's motion for summary judgment in part, determining that two of Rosco's post trial mirrors continued to infringe, and denied Rosco's motion for summary judgement. I found there was a genuine issue of fact as to whether three other Rosco post trial mirrors continued to infringe Mirror Lite's patent. I then scheduled a trial date to hear damage issues.

What remains for determination are (1) the damages resulting from Rosco's infringement of Mirror Lite's '984 patent¹; and (2) whether Rosco's mirrors #1, #2 and/or #5 infringe the '984 patent.²

For the reasons set forth below, Mirror Lite is entitled to a reasonable royalty damages award in the amount of \$397,843.25. Mirrors 1, 2, and 5 do not infringe on Mirror Lite's '984 patent, and Mirror Lite is not entitled to future damages or enhanced damages. Mirror Lite's motions to strike evidence relating to the bisecting test and template test, strike Folan's testimony on

¹ I have already determined that 90,000 Rosco pre-trial mirrors infringed Mirror Lite's '984 patent. *Rosco Inc. v. Mirror Lite Co.*, No. 96-CV-5658, 2006 WL 2844400 (E.D.N.Y. Sept. 29, 2006). I have yet to determine how many of the two types of mirrors found to infringe in Mirror Lite's November 10, 2006 motion for summary judgment were sold by Rosco.

² On November 10, 2006, Mirror Lite moved for summary judgment contending that five Rosco post-trial mirrors infringed the '984 patent. I found that Mirror #3 (Replex made, vacuum formed, Mini Hawkeye mirror) and #4 (Replex made, vacuum formed Hawkeye mirror) infringed. I denied summary judgment as to the three remaining mirrors (#1 - Lexalite made, injection-molded, Mini Hawkeye mirror; #2 - Lexalite made, injection-molded, Hawkeye mirror; and #5 - Replex made, thermo-molded Hawkeye mirror). If any of these mirrors are found to infringe, I then have to determine how many of the infringing mirrors were sold by Rosco.

patent matters and introduce evidence from pre-2000 that allegedly relates to damages post-2000 are all denied. Mirror Lite's request for an amended proposed permanent injunction, with the exception of paragraph 2(b), is granted.

What follows sets forth the findings of fact and conclusions of law on which these determinations are based as required in Rule 52 of the Federal Rules of Civil Procedure. Fed. R. Civ. P. 52(a)(1).

BACKGROUND

Procedural History

The facts of this case have already been stated several times in the prior opinions in this case. See, e.g., *Rosco Inc. v. Mirror Lite Co.*, 506 F.Supp.2d 137 (E.D.N.Y. 2007). It is unnecessary to repeat them here. A procedural history is set forth below.

Rosco's '357 design patent relates to an oval, highly convex cross-view mirror with a black, flat metal backing. Rosco applied for this patent in April of 1992, and the patent issued in April of 1994. Mirror Lite's '984 utility patent relates to an oval cross-view mirror with a varying radius of curvature along the major axis of the convex ellipsoid mirror lens. Mirror Lite applied for this patent in September of 1992, and the patent issued in December of 1996.

In its complaint, Rosco sought a declaratory judgment that

all claims of Mirror Lite's '984 patent were invalid and unenforceable due to Mirror Lite's inequitable conduct in procuring the patent and a finding that Mirror Lite infringed its '357 patent. Mirror Lite asserted a counterclaim alleging that Rosco infringed the '984 patent. At trial, Mirror Lite contended that Rosco's patent was invalid as functional and therefore not infringed.

After a bench trial, I held in relevant part that Rosco's '357 patent was invalid as functional and obvious pursuant to 35 U.S.C. § 103.³ I also found Mirror Lite's patent invalid under 35 U.S.C. § 102 (e)⁴ and (g)⁵. Accordingly, I did not reach the merits of Mirror Lite's patent infringement claim.

The Federal Circuit reversed my conclusions that Rosco and Mirror Lite's patents were invalid. The Court remanded in relevant part for consideration of: 1) whether Mirror Lite had proven by clear and convincing evidence that Rosco's patent was invalid under 35 U.S.C. § 103; 2) whether Mirror Lite had infringed Rosco's patent; 3) whether Mirror Lite's patent was

³ 35 U.S.C. § 103 limits patentability if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

⁴ 35 U.S.C. § 102(e) provides that person is entitled to a patent unless the invention was the subject of a previously issued patent.

⁵ 35 U.S.C. § 102(g) provides that person is entitled to a patent unless "before such person's invention thereof, the invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it."

invalid under 35 U.S.C. §§ 102(a),⁶ (f), and 103; 4) whether Mirror Lite's patent was unenforceable due to inequitable conduct; and 5) whether Rosco had infringed on Mirror Lite's patent.

On remand, Mirror Lite conceded that Rosco's patent was valid, while Rosco argued that Mirror Lite's '984 patent was invalid. Rosco contended that prior to the date of Mirror Lite's invention, Rosco had conceived, reduced to practice, and sold mirrors containing all the elements of claims 1, 2, 3, 6, 7, and 8 of the '984 patent, thus rendering it invalid under 35 U.S.C. § 102(a). Benjamin Englander, one of Rosco's owners, testified to that effect. Rosco introduced this mirror as Exhibit 110, called a "Hawk Eye Mirror" based on the '357 patent. Mirror Lite responded that: 1) Rosco failed to show that its previous mirror had decreasing radii of curvature along its major and minor axes and did not contain a reflective outer surface and a non-reflective inner surface; or in the alternative, 2) that Rosco could not show that it appreciated these aspects of its mirror; and 3) that Rosco could not prove that it had used this mirror publicly before the priority date of the '984 patent.

I found that Exhibit 110 did have these qualities, that Rosco had used the mirror publicly, and that Rosco had

⁶ 35 U.S.C. § 102(a) provides in part that a person is not entitled to a patent unless "the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent."

anticipated Mirror Lite's patent under 35 U.S.C. § 102. I also held that Mirror Lite's '984 patent was unenforceable due to Mirror Lite's inequitable conduct in procuring the patent. Specifically, I held that Mirror Lite had intended to mislead the examiner by failing to disclose prior art.

I also held that Rosco failed to prove its claim of infringement. In particular, Rosco sought to prove that four of Mirror Lite's mirrors infringed on Rosco's '357 patent, but Rosco had not proven that the four allegedly infringing mirrors appropriated the novelties that distinguished Rosco's '357 patent from prior art.

On appeal for the second time, the Federal Circuit again reversed this Court's conclusion that Exhibit 110 anticipated Mirror Lite's '984 patent. Specifically, the Circuit Court held that Rosco failed to prove by clear and convincing evidence that Exhibit 110 disclosed every claim limitation of the '984 patent because "[t]estimonial evidence of invalidity must be corroborated." *Rosco, Inc. v. Mirror Lite, Co.*, 03-1562, 120 Fed.Appx. 832 (Fed. Cir. Jan. 19, 2005) (unpublished). Rosco presented the testimonial evidence of Benjamin Englander to the effect that he had designed Exhibit 110 and that it contained every element of claims 1, 2, 3, 6, 7, and 8 of Mirror Lite's '984 patent. Exhibit 110 itself, the Federal Circuit held, was insufficient to corroborate this testimony. Nor did the

testimony of Rosco's expert witness, Harvey Manbeck, suffice because he based his testimony on Benjamin Englander's representations. With regard to my finding of inequitable conduct by Mirror Lite for failing to disclose prior art, the Federal Circuit held that there was insufficient evidence of Mirror Lite's intent to deceive. The Federal Circuit remanded "for further proceedings solely on the issue of infringement, the determination of which should be made on the existing trial record."

I thereafter determined that Mirror Lite had proven that Rosco infringed Mirror Lite's '984 patent. I also ordered limited additional discovery on two issues: (1) whether and to what extent Rosco continued to sell Hawk Eye and Mini Hawk Eye mirrors post-trial; and (2) post-trial revenue, costs, and profits Rosco has earned or incurred through sale or manufacture of Hawk Eye and Mini Hawk Eye mirrors.

Mirror Lite made a motion for a permanent injunction pursuant to 35 U.S.C. §283 which I granted with the exception of ¶2(b), to be entered upon resolution of the remaining damages issues. I precluded discovery as to inquiries concerning the period from December 31, 1996 to March 6, 2000 and to the extent it sought information on "all mirrors" or on "mirrors" generally. I also corrected factual finding #16 of my August 26, 2005 opinion, and adopted the pre-trial sale figure of 90,000

infringing mirrors. In addition, Rosco raised the new argument that some of its post-trial Hawk Eye and Mini Hawk Eye mirrors did not infringe because they have a constant radius of curvature, and thus that Mirror Lite should not be allowed discovery as to these non-infringing mirrors. I stated in the decision that Mirror Lite should be entitled to determine for itself whether some Hawk Eye and Mini Hawk Eye mirrors have a constant radius of curvature but that Mirror Lite would only be permitted to take discovery of revenues and costs on mirrors that are *prima facie* infringing.

Recent Procedural History

Rosco and Mirror Lite thereafter filed cross motions for summary judgment relating to the Hawk Eye and Mini Hawk Eye mirrors sold by Rosco post-trial. Rosco asserted that its post-trial Hawk Eye and Mini Hawk Eye mirrors have constant radii of curvature or substantially constant radii of curvature and therefore do not infringe Mirror Lite's '984 patent. Mirror Lite argued that all of the post-trial Hawk Eye and Mini Hawk Eye mirrors have varying radii of curvature and all infringe. In addition both sides filed various evidentiary motions relating to Rosco's summary judgment submissions. I denied Rosco's Motion for Summary Judgment, and granted in part and denied in part

Mirror Lite's Motion for Summary Judgment⁷. Mirror Lite's Motions to Strike Rosco's Memorandum on Claim Construction and Rosco's New Evidence and Reliance on a Lomar Mirror were denied as moot. I denied Mirror Lite's Motion to Strike the Declaration of Peter Sinclair. Mirror Lite's Motion to Strike Rosco's Newly Offered CMM Tests and Accompanying Supporting Declaration of Professor Folan was denied in part and granted in part. Rosco's Motion to Strike the Declaration of Prof. Howell was granted only with respect to paragraph 10.

On July 13, 2007, Rosco filed a Request for Reexamination of the '984 patent with the United States Patent and Trademark Office. Rosco requested a pre-motion conference with this Court for permission to file a Motion to Stay the pending litigation in this case based on: (1) the PTO's high frequency of granting such requests and subsequently either limiting the scope of or invalidating the reexamined patent; (2) judicial economy; and (3) that there will be no undue burden on Mirror Lite, while not staying the case would prejudice Rosco. In response, Mirror Lite argued that it would be prejudiced if the court stayed litigation. I denied the request for a stay because a stay would

⁷ Mirror Lite contended that five Rosco mirrors infringed. I found that Mirror #3 (Replex made, vacuum formed, Mini Hawkeye mirror) and #4 (Replex made, vacuum formed, Hawkeye mirror) infringed the '984 patent. I denied summary judgment as to the three remaining mirrors.

prejudice Mirror Lite in the advanced stage of the litigation.⁸

Discussion

Damages

Mirror Lite seeks damages it incurred due to Rosco's infringement of its '984 patent. The purpose of a patentee's monetary award is to adequately compensate the patentee for the infringement and to restore the patentee to the position he would have occupied had the infringement not occurred. *Albemarle Paper Co. v. Moody*, 422 U.S. 405, 418-19, 95 S. Ct. 2362, 45 L. Ed. 2d 280 (1975); *Armco Inc. v. Republic Steel Corp.*, 707 F.2d 886, 891 (6th Cir. 1983). The measure of damages in an infringement case is "the difference between [the patent owner's] pecuniary condition after the infringement, and what his condition would have been if the infringement had not occurred." *Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 507 (1964). There are two approaches to the determination of a patentee's monetary award, lost profit calculations and reasonable royalty calculations. To recover lost profits a patentee must produce evidence of "a causal relation between the infringement and its loss of profits." *BIC Leisure Prods., Inc. v. Windsurfing Int'l, Inc.*, 1 F.3d 1214, 1218 (Fed.Cir. 2001). Where the evidence is

⁸ On October 24, 2007, the PTO granted Rosco's request and reexamined the '984 patent. On November 26, 2008, the PTO confirmed the patentability of the '984 patent.

inadequate to establish lost profits, i.e. a patent owner cannot establish causation for a segment of the infringer's sales, a Court must determine a "reasonable royalty rate."⁹

⁹ In determining a reasonable royalty rate, the Court is to consider, to the extent there is evidence on the record, the factors listed in *Georgia-Pacific Corp. v. United States Plywood Corp.*, 318 F. Supp. 1116, 1120 (S.D.N.Y. 1970). See *Dow Chemical Co. v. Mee Indus., Inc.*, 341 F.3d 1370, 1381-82 (Fed. Cir. 2003); *Lindemann*, 895 F.2d 1403; *Devex Corp. v. Gen. Motors Corp.*, 667 F.2d 341 (Fed. Cir. 1981); *National Presto Indus. v. Black & Decker (U.S.), Inc.*, 760 F. Supp. 699, 701 (N.D. Ill. 1991). The fifteen factors are:

1. The royalties received by the patentee for the licensing of the patent in suit, proving or tending to prove an established royalty.
2. The rates paid by the licensee for the use of other patents comparable to the patent in suit.
3. The nature and scope of the license, as exclusive or non-exclusive; or as restricted or non-restricted in terms of territory or with respect to whom the manufactured product may be sold.
4. The licensor's established policy and marketing program to maintain his patent monopoly by not licensing others to use the invention or by granting licenses under special conditions designed to preserve that monopoly.
5. The commercial relationship between the licensor and licensee, such as, whether they are competitors in the same territory in the same line of business; or whether they are inventor and promoter.
6. The effect of selling the patented specialty in promoting sales of other products of the licensee; that existing value of the invention to the licensor as a generator of sales of his non-patented items; and the extent of such derivative or convoyed sales.
7. The duration of the patent and the term of the license.
8. The established profitability of the product made under the patent; its commercial success; and its current popularity.
9. The utility and advantages of the patent property over the old modes or devices, if any, that had been used for working out similar results.
10. The nature of the patented invention; the character of the commercial embodiment of it as owned and produced by the licensor; and the benefits to those who have used the invention.
11. The extent to which the infringer has made use of the invention; and any evidence probative of the value of that use.
12. The portion of the profit or of the selling price that may be customary in the particular business or in comparable businesses to allow for the use of the invention or analogous inventions.
13. The portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing process, business risks, or significant features or improvements added by the infringer.
14. The opinion testimony of qualified experts.
15. The amount that a licensor (such as the patentee) and a licensee (such as the infringer) would have agreed upon (at the time the infringement began) if both had been reasonably and voluntarily trying to reach an agreement; that is, the amount which a prudent licensee- who desired, as a business proposition, to obtain a license to manufacture and sell a particular article embodying the patented invention- would have been willing to pay as a royalty and yet be able to make a reasonable profit and which amount would have been acceptable by a

35 U.S.C. § 284; *Lindemann Mashinenfabrik GmbH v. American Hoist & Derrick Co.*, 895 F.2d 1403 (Fed. Cir. 1990). Under either a lost profit or reasonable royalty measure, the patent holder must "reconstruct the market to project economic results" of what would have occurred had the market developed absent the infringing product or what agreement would have resulted had a hypothetical negotiation over royalty rates occurred. *Ericsson, Inc. v. Harris Corp.*, 352 F.3d 1369, 1377 (Fed. Cir. 2003); *Riles v. Shell Exploration & Prod. Co.*, 298 F.3d 1302, 1311 (Fed.Cir. 2002).

Mirror Lite's Motion to Introduce Evidence from Pre-2000
that Relates to Damages Post-2000

Mirror Lite, at the Court's invitation, made a motion¹⁰ to introduce additional damages evidence for the period prior to the trial in March, 2000. Mirror Lite's motion did not seek to offer evidence to supplement damages resulting from the 90,000 mirrors found to infringe as a result of the first trial ("Tr. I"). Rather, Mirror Lite sought to introduce the evidence to supplement the damages record from the second trial ("Tr. II") (i.e. damages incurred from March 7, 2000, to the present).

prudent patentee who was willing to grant a license. *Georgia-Pacific Corp.*, 318 F. Supp. at 1120.

¹⁰ Mirror Lite made a "Motion to Permit Mirror Lite to Introduce Evidence from Pre-2000 that Relates to Damages Post-2000." Mirror Lite does not cite any case law in support of its motion.

Rosco argued that this issue has twice before been addressed by this Court in previous decisions and both times been denied.

Rosco further argues that Mirror Lite already had the opportunity to seek discovery of any information pre-2000 (specifically Rosco argues that this information should have been sought during discovery prior to the trial in 2000), and that Rosco would be prejudiced should Mirror Lite be allowed to supplement the record now.

In my Memorandum Opinion and Order of August 26, 2005, I ordered additional, albeit limited, damages discovery in this matter upon remand from the Federal Circuit. Specifically, I allowed Mirror Lite to take additional discovery as to, "1) whether and to what extent Rosco continued to sell Hawk Eye and Mini Hawk Eye mirrors after the trial [in March of 2000]; and 2) post-trial revenue, costs and profits Rosco has earned or incurred through sale or manufacture [subsequent to the trial in March of 2000] of Hawk Eye and Mini Hawk Eye mirrors." The purpose of this additional discovery was to allow Mirror Lite to gather evidence of post-trial (after the March, 2000 trial) damages. I explicitly stated that this additional discovery was not akin to pre-trial discovery (prior to the March, 2000 trial), nor would I allow Mirror Lite to use this opportunity to supplement the record with regard to damages from the period prior to the March, 2000 trial. However, at the damages trial

in 2008, both Rosco and Mirror Lite sought to introduce evidence relating to the period prior to the first trial.¹¹ In light of this, I invited each side to brief the issue whether I should reopen damages discovery for the period prior to March 7, 2000.

In a motion to introduce additional evidence, Mirror Lite proposed to submit declarations containing pre-2000 evidence of damages to supplement its post-2000 damages evidence. According to Mirror Lite, the purpose of the additional pre-2000 evidence submissions would be to establish its price erosion claims and "other damages related information." (Mirror Lite's Mot. to Introduce Evidence Pre-2000 that Relates to Damages Post-2000, 3.) Mirror Lite contended that prior to 2000 it raised its prices on mirrors each year, but, that by 2000, "after Rosco had successfully minimized any competition from Mirror Lite, Rosco's refusal to raise prices precluded Mirror Lite from raising its prices." *Id.*, at 2. Mirror Lite argued that it would be entitled to at least one million dollars in damages as a result of Rosco's alleged price erosion should I allow this additional evidence to be entered into the record.

At trial, all the additional information Mirror Lite sought to enter, with the exception of information relating to price erosion, was based on the supposition that it would be awarded

¹¹ I declined to allow Mirror Lite to rely on new evidence purporting to show damages incurred before March 7, 2000.

lost damages in the measure of lost profits. However, as explained below, I conclude that Mirror Lite is not entitled to lost profits, but rather to damages in the amount of a reasonable royalty. It is accordingly unnecessary to decide this issue.

With regard to the information relating to price erosion, Mirror Lite stated that it wished to offer a declaration and supporting documentation on the amount it was able to raise its prices on cross view mirror assemblies each year prior to March, 2000. I decline to award Mirror Lite any price erosion damages, but not for lack of Mirror Lite's ability to prove what price increases it regularly took prior to 2000. The information Mirror Lite is seeking to offer would not cure the faults in its lost profits claim. Upon consideration of both sides arguments and a review of the record, I will not allow either party to present additional evidence concerning the pre-2000 damages.¹²

Lost Profits as a Measure of Damages

As noted already, to recover damages in the amount of lost profits, the patentee has to show "but for" causation, that the patent owner would have made the sales of the product *but for* the infringement. *Wechsler v. Macke Intern. Trade, Inc.*, 486 F.3d 1286, 1293 (Fed.Cir. 2007); *Rite-Hite Corp. v. Kelley Co.*, 56

¹² Because I am not permitting Mirror Lite to enter any additional information from the earlier time period, I will not consider any new information offered by Rosco from this time period first introduced at the 2008 trial.

F.3d 1538 (Fed.Cir. 1995); *BIC Leisure*, 1 F.3d at 1218.

Causation may be established by proof of: (1) demand for the patented product in the market; (2) the patent owner's ability to meet the market demand; (3) the absence of acceptable substitutes; and (4) the amount of profit the patentee would have made absent the infringement. *See, e.g., Ericsson*, 352 F.3d 1369; *Yarway Corp. v. Eur-Control USA, Inc.*, 775 F.2d 268, 275-76 (Fed. Cir. 1895); *Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1156 (6th Cir. 1978). In a two supplier market, the factors of demand and acceptable substitutes are collapsed, leaving the patentee to show: (1) the relevant market only contains two suppliers; (2) the patent owner's ability to meet market demand; and (3) the amount of profit the patentee would have made absent the infringement. *Grain Processing Corp. v. American Maize-Products Co.*, 185 F.3d 1341 (Fed.Cir. 1999).

Lost Profit Damages for Pre-Trial Infringement

Both the *Panduit* four factor test and the three factors for the two supplier market test require a patentee to prove the amount of profit it would have made absent the infringement. Mirror Lite did not present any such evidence at either trial.¹³ Mr. Chase, Mirror Lite's damages expert, did not offer any opinion on the amount of profits Mirror Lite would have made

¹³ In its post-trial brief, Mirror Lite concedes that no such evidence was offered and instead asks for damages in the amount of a reasonable royalty for all pre-trial infringing mirrors. (Mirror Lite's Post Trial Br. 48-49.)

absent infringement and only gave an amount for a reasonable royalty award for the pre-trial infringing mirrors. Since there is no evidence of the amount of pre-trial profits Mirror Lite would have made, damages in the amount of lost profits are not available for Rosco's pre-trial sales of infringing mirrors.

Lost Profit Damages for Post-Trial Infringement

As explained below, Rosco had acceptable, available non-infringing alternatives to the varying radius mirrors, negating one of the components of but for causation. *Wechsler v. Macke Intern. Trade, Inc.*, 486 F.3d at 1293; *Rite-Hite Corp. v. Kelley Co.*, 56 F.3d 1538. So, Mirror Lite cannot show that it would have made the sales that Rosco made.

Two-supplier Market

Mirror Lite contends that there are only two suppliers in the relevant market, and therefore, it should not have to prove that there was demand for the patented product in the market or that there were no acceptable substitutes. Although I agree that this is a two supplier market¹⁴, that finding does not preclude

¹⁴ Rosco's damages expert, Mr. Gerardi, opines that there were other companies in the market. However, the information he gave about competitors was based on whether there were other competitors in 1992. (Tr. II 868-69.) The applicable period here begins December 31, 1996. There is no evidence that any of those companies were in the market in 1996, and there was no proof of competitors at the time of the damages trial in January, 2008. Mr. Gerardi testified that Tiger Vision Systems and Velvac both advertise on their web sites that they each have a cross view mirror available for school buses. (Tr. II 871.) Although these companies may have product available, no proof was presented that either company had any market share, which means, that at best, their market share for these products would be negligible. In addition,

Rosco from offering evidence to rebut the presumption of the existence of acceptable, available non-infringing alternatives. *Micro Chemical, Inc. v. Lextron Inc.*, 318 F.3d 1119 (Fed.Cir. 2003). Lost profit damages must be supported by substantial evidence i.e. there has to be a reasonable probability that the patentee would have made the sales made by the infringer. *Rite-Hite*, 56 F.3d 1538.

Rosco mirror 1, the Lexalite mini hawkeye mirror was conceived of, produced prior to, and was first sold in March 2000. Mirror 1 does not infringe. *Infra*, 40-49. It has conformed with Federal Motor Vehicle Safety Standards § 111 ("FMVSS 111") since it was first sold. Customers like the product, as evidenced by the large number of sales of the mirror. It therefore meets all the requirements of the *Panduit* test and is an available, acceptable non-infringing alternative. 575 F.2d at 1156. Rosco did not make mirror 2, a Lexalite hawkeye, until 2005. However, I find that mirror 2 could have been fabricated and sold starting around the same time that Rosco fabricated and sold mirror 1. *Grain Processing*, 185 F.3d at 1353 (a non-infringing substitute not on the market during the time of

Mr. Gerardi identified the Rosco integra mirror as an available non-infringing alternative. *Id.* However, the integra mirror is made specifically for flat nose (or "Class D") buses, and therefore would not fit regular buses. There was no evidence presented as to whether, if modified for regular buses, integra mirrors would meet federal safety requirements. Therefore, the integra mirror is not an available non-infringing alternative.

infringement may have been available for the purposes of defeating a lost profits claim if other facts show the infringer could have manufactured the non-infringing alternative and would have known it to be acceptable to consumers at the time of infringement). Rosco also could have made mirror 2 compliant with FMVSS 111, as it did mirror 1. Customers would have bought the mirror and have in fact bought the mirror in substantial quantities since it has been available for purchase. Mirror 2 does not infringe. See Infringement Discussion, *infra*. Therefore, mirror 2 is an available, acceptable non-infringing alternative available to Rosco, as it, too, meets the requirements of the *Panduit* test.

Since Rosco had available acceptable non-infringing substitutes, there is no reason to assume that Rosco's customers would have bought a mirror with a varying radius of curvature from Mirror Lite when it could have continued to purchase acceptable non-infringing mirrors from Rosco. In fact, the market shows that most customers chose to do just that. In 2005, when customers were informed that Rosco only sold constant curvature mirrors, customers continued to buy mirrors from Rosco. (Tr. II 596-97.) Since Rosco had an acceptable, available non-infringing alternative, and sold that alternative concurrently with infringing mirrors, Mirror Lite would not have made the sales made by Rosco. Rather, Rosco would have simply sold non-

infringing alternatives to its customers. Therefore, Mirror Lite is not entitled to lost profits. See *Grain Processing*, 185 F.3d at 1348-50 (lost profits should be denied where there were acceptable non-infringing alternatives "available or on the market at the time of infringement," and that a reasonable royalty sum should be used to calculate any damages).

Reasonable Royalty as a Measure of Damages

When the patentee cannot provide sufficient evidence to establish lost profits, the Court determines a reasonable royalty taking into account the *Georgia-Pacific* factors, to the extent that there is evidence in the record. See footnote 8, *supra*. The patent holder must "reconstruct the market to project economic results" to recover a reasonable royalty. *Ericsson*, 352 F.3d at 1377. The purpose of the reconstruction is to show what agreement would have resulted had a hypothetical negotiation over royalty rates occurred. *Id.* Mirror Lite argues that a reasonable royalty rate is \$2.50 per mirror, while Rosco argues that a reasonable royalty rate is \$0.58 per mirror. I will discuss below only those factors which would have an impact on the licensing negotiations by either increasing or decreasing the reasonably royalty rate.

Georgia-Pacific Factors

(4) *Licensor's established policy to maintain its patent*

monopoly. Mirror Lite would not want to license its patent to its only competitor in the bus cross view mirror market, since at the time of first infringement Mirror Lite supplied 95% of the cross view mirror market. This factor weighs in favor of Mirror Lite, increasing the reasonable royalty rate.

(5) *Commercial relationship between licensor and licensee.* Mirror Lite and Rosco are in a two supplier market, and are direct competitors. This factor weighs in favor of Mirror Lite, increasing the reasonable royalty rate.

(6) *Effect of selling the patented invention in promoting sales of other products of the licensee.* With the license, Rosco would also be able to sell the accompanying components of a mirror assembly, such as brackets and mounting hardware, in addition to other bus mirrors. Mirror Lite would lose sales of assemblies with each sale Rosco makes. This factor weighs in favor of Mirror Lite, increasing the reasonable royalty rate.

(7) *Duration of the patent and the term of the license.* At the time of first infringement in December 1996, the '984 patent still had approximately 16 years left on its term. The lengthy duration weighs in favor of Mirror Lite, increasing the reasonable royalty rate.

(8) *Established profitability of the product, its commercial success and current popularity.* Rosco's version of the product

was profitable and a commercial success because it increased Rosco's share of the cross view bus mirror market from 5% in 1993 to 45-45% in 2000. Rosco no longer makes an infringing mirror, but it had large sales of infringing mirrors until 2005, the time it stopped selling the infringing product. This factor weighs in favor of Mirror Lite, increasing the reasonable royalty rate.

(9) and (10) *Utility and advantages of the patent property over the old modes or devices; nature of the patented invention, character of the commercial embodiment and benefits to those who use the invention.* Mirror Lite states that the advantage of the patent is the lens's wider field of view. Rosco argues that there is no appreciable patent advantage because all cross view mirrors need a field of vision large enough to comply with FMVSS 111. Rosco's constant curvature radius mirrors do comply with the federal standards, even if their field of view is less than that of mirrors made along the '984 patent. Even if a wider field of view is not necessary to comply with FMVSS 111, there are advantages to having an appreciably wider field view on a cross view mirror - a driver can see larger areas of road. These factors weigh in favor of Mirror Lite, increasing the reasonable royalty rate.

(11) *Extent to which infringer has made use of that invention.* Rosco sold infringing mirrors from 1996 - 2005. The sales helped Rosco increase its market share of the bus cross

view mirror market. This factor weighs in favor of Mirror Lite, increasing the reasonable royalty rate.

(12) *Portion of the profit or selling price customarily associated with the invention.* Mirror Light's expert, Mr. Chase, argued that since Rosco risks losing all of its cross-view mirror sales and all of its incremental profit, this factor should have an upward influence on the reasonable royalty rate. (Tr. II 372-373.) However, this argument is based on Mr. Chase's assumption that all of the Rosco mirrors infringe (Tr. II 341), which is not the case. See Infringement Discussion, *infra*. Where, as here, an infringer has an available acceptable non-infringing alternative, it would not risk losing all its sales, and therefore would not risk losing all its incremental profits, no matter what portion is attributed to the invention. This factor weighs in favor of Rosco, decreasing the reasonable royalty rate.

(13) *Portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing process, business risks or other features and improvements added by the infringer.* Mirror Lite argues that this factor increases the reasonable royalty rate because customers are making a purchase because they want the patented product, and without a license, Rosco would not have been able to sell any infringing mirrors. Mirror Lite contends

that Rosco would rather sell infringing mirrors and pay a fee to the patentee than not sell any mirrors and loose its foothold in the market. (Tr. II 372.) Mirror Lite contends that since Rosco has kept its prices of the patented product artificially low, Rosco has a pricing flexibility of up to \$6.00, whereby it can increase the price of the patented mirrors and still profit from sales. (Tr. II 368, 372-73.) I don't agree with Mr. Chase's analysis of pricing flexibility for the same reasons I don't agree with Mr. Chase's proposed reasonable royalty, namely that some of the numbers he uses in computing his amount were not backed up by accurate data. *See The Court's Reasonable Royalty Award, infra.* However, I do agree with the argument that Rosco would have sold the infringing mirrors and negotiated a per lens fee in order to keep its market share of the cross view mirror market. Therefore, this factor weighs in favor of Mirror Lite, increasing the reasonable royalty rate.

(14) and (15) *Opinion testimony of qualified experts; hypothetical negotiations between a licensor and licensee.* As explained below, neither expert offered a completely accurate view of how an hypothetical negotiation would have proceeded in this case. Each expert's analysis left out important factors. I explain my concerns with each side's proposed hypothetical negotiation and why each side has a stronger case than that proposed by its adversary. Therefore, I find these two factors

to weigh equally in favor of each litigant.

Mirror Lite's Hypothetical Negotiations

Mr. Chase, Mirror Lite's damages expert believes that \$2.50 is an appropriate and conservative reasonable royalty rate for each mirror. Mr. Chase assumed during his negotiations that all Rosco's mirrors infringe. (Tr. II 341.) He began the negotiation with what he calculated as Mirror Lite's incremental profit per mirror, \$7.16.¹⁵ (Tr. II 364.) Mr. Chase believed that Rosco's opening negotiation stance would be that their gross margins on this product are not high and that by the time they pay all their corporate expenses, their profits are close to zero. (Tr. II 365.) Mr. Chase predicted that Mirror Lite would make a "very big initial compromise" and accept half of Rosco's incremental profit per mirror, \$3.58, as a reasonable royalty. *Id.* At that point, according to Mr. Chase, Rosco has no other argument¹⁶ to lower the rate other than the argument that Rosco doesn't make much profit on these mirrors. *Id.* Mirror Lite, in this negotiation, would come down as low as \$2.50. *Id.* Mr. Chase gives two reasons for this. First, Rosco's did not

¹⁵ Mr. Chase calculated Rosco's incremental profit per mirror as \$7.84, which, as discussed hereinafter, Rosco disputes. Mr. Chase uses the \$7.16 figure because he said that using Rosco's incremental profit figure is akin to a lost profit analysis. Tr. II 364.

¹⁶ This belief is hinged on Mr. Chase's assumption that all the post-trial mirrors infringe. But, since this assumption is incorrect, as discussed below, Rosco would be in the position to bargain for a lower reasonable royalty rate.

disclose all its itemized cost deductions associated with cross-view mirrors. (Tr. II 365-66.) Specifically, Rosco included professional fees and some contributions in its incremental cost analysis, and without further information, Mr. Chase cannot determine whether all of those fees are appropriately allocated to cross-view mirror sales as opposed to being allocated throughout the company as a whole. (Tr. II 366.) Mr. Chase allocated these and other fixed costs, such as salaries and rent, to determine that Rosco would earn \$3.21 on each mirror after a fixed cost allocation. *Id.* Mr. Chase concluded that \$2.50 is a reasonable royalty rate per mirror, as it is also less than his calculation of Rosco's profit with a fixed cost allocation. *Id.*

Mr. Chase also argues that \$2.50 is an appropriate amount because Rosco makes a lower profit margin on their cross-view mirrors than it does on any other product. *Id.* Mr. Chase opines that Rosco has pricing flexibility on the mirrors and can simply pass the royalty fee onto their customers in the form of an increase in price in the amount of the royalty. *Id.*

(Tr. II 897.) For his calculations, Mr. Gerardi subtracted Rosco's actual cost of manufacturing an infringing, tinted vacuum formed lens from its cost of manufacturing the more expensive, non-infringing, tinted injection and thermal formed lenses. *Id.* This is Rosco's design around cost to manufacture the non-infringing tinted mirrors. The difference in price was \$0.84 per lens. He did the same calculation for the untinted lenses and came up with a difference in price of \$0.51 per lens. *Id.* This is Rosco's design around cost to make the non-infringing untinted mirrors. Then, Mr. Gerardi multiplied each difference in price by the percentage of sales it represents in Rosco's total sales of cross view mirrors, and then added the numbers together to get \$0.58 per unit.¹⁷ *Id.* Mr. Gerardi also allocated the tooling costs, \$26,250 for the pre-trial mirrors and \$70,000 for post-

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	Injection / Thermo Formed Lenses (1, 2, 5) - Average Cost to Create Per Unit	Vacuum Formed Lenses (3, 4) - Average Cost to Create Per Unit	Design Around Cost Per Unit x Percentage of Sales	Total (rounded to the nearest tenth)
Tinted Hawkeye and Mini Hawkeye	\$5.96	\$5.12	= \$0.84 x 21%	\$0.18
Untinted Hawkeye and Mini Hawkeye	\$4.26	\$3.75	= \$0.51 x 79%	\$0.40
Grand Total Weighted Design Around Cost Per Unit Sold				\$0.58

trial mirrors 3 and 4,¹⁸ which Rosco incurred to make the molds for these mirrors and other equipment needed to manufacture the non-infringing lenses. (Tr. II 897-98.)

The Court's Reasonable Royalty Award

Both Mirror Lite's and Rosco's negotiations have flaws. I award Mirror Lite a reasonable royalty of \$1.75 on each infringing mirror sold by Rosco. *ResQNet.com, Inc. v. Lansa, Inc.*, 533 F.Supp.2d 397 (S.D.N.Y. Feb. 1, 2008) (assessing and computing reasonable royalty damages is within the sound discretion of the district court); see also 35 U.S.C. § 284.

Mirror Lite's negotiations are flawed by arbitrary deductions made by Mr. Chase in Rosco's expenses. Mr. Chase did not conduct any independent research as to what reasonable rent would be in the geographic area in which Rosco's offices are located, so he did not have any basis for deciding what the appropriate rent should be before allocating a portion of that "appropriate" rent to Rosco's production of cross view mirrors. Similarly, Mr. Chase arbitrarily allocated \$350,000 in salaries from 2000-2006 to the management and production of the cross view mirrors. He had no basis for this allocation other than that \$350,000 is what he believed to be appropriate compensation. Mr. Chase also reduced other expenses claimed by Rosco, such as

¹⁸ It is unclear how, exactly, the tooling costs were allocated.

donations, travel, legal fees, etc. However, here, too, there was no explanation for the amount of reduction other than Mr. Chase believed his reductions to be appropriate.

I have no way to cure these flaws. As mentioned above, there was no evidence offered as to what a reasonable rent, if the current rent is unreasonable, should be. So, there is no way for me to determine whether Mr. Chase's adjustments were reasonable. This same concern applies to Mr. Chase's reduction in officer salaries. I have not been given any information as to what the accepted salary range is for a person in a comparable position in this geographic location. There is also no explanation for Mr. Chase's reductions in Rosco's other expenditures, other than, again, the reductions are what Mr. Chase thought were appropriate.¹⁹ For all these reasons, Rosco would have had a stronger position during negotiations than Mirror Lite assumed, and therefore, it is appropriate to award a reasonable royalty lower than that which Mirror Lite proposed. See *Georgia Pacific*, 318 F.Supp. At 1120. (the 15 factors set forth in the decision are not all inclusive and additional factors may be considered by the court in arriving at a reasonable royalty rate).

Rosco's position on how to calculate reasonable royalty,

¹⁹ With this last category, Rosco redacted the breakdown of the expenditures while supplying the total spent, and therefore, it would have been difficult for Mr. Chase to supply me with accurate information.

however, has problems of its own. Rosco's contends that a reasonable royalty paid by the infringer should be capped at the infringer's design around cost. (Tr. II 856-57, 889-90.) See, e.g., *Grain Processing*, 185 F.3d at 1347. In that line of cases, there was an available, acceptable non-infringing alternative at the date of first infringement (which is also the date of the hypothetical negotiations). Here, however, although a non-infringing alternative was developed during the life of the patent, there is insufficient proof²⁰ that the non-infringing alternatives were available at the date of first infringement. Therefore, Rosco's contention that it would not have paid more than a design around is, at best, based on the premise that it would develop a acceptable non-infringing alternative in 2000. See, e.g., *Standard Mfg. Co., Inc. v. U.S.*, 42 Fed.Cl. 748, 762 (Fed.Cl. 1999) (later-occurring events may be taken into consideration when engaging in a hypothetical reasonable royalty negotiation; this is also known as the "book of wisdom"). Rosco still would have preferred to infringe and capture market share from the date of first infringement until the non-infringing alternative was available than not have a product to sell, as

²⁰ There was some trial testimony that the technology to design acceptable non-infringing alternatives was available as early as 1992. (Tr. II 872-73.) Ben Englander testified that Rosco used other lens manufacturers to make vacuum formed lenses but turned to Lexalite to fabricate the non-infringing alternative lenses in 1999. (Tr. II 576.) This makes me question at what point the technology could be used to fabricate these particular lenses.

evidenced by their decision to sell infringing mirrors from 1996 through 2004. Therefore, I find Rosco would have been willing to pay a reasonable royalty fee in an amount greater than its design around costs to enable it to keep, and even grow, its share of the cross view mirror market. So, Mirror Lite would have had a stronger position during negotiations than Rosco assumed, and it is appropriate to award a reasonable royalty higher than that which Rosco proposed.

In light of the fact that I find each party would have had a strong negotiating position, a reasonable royalty rate between the two rates proposed is appropriate. The reasonable royalty rate of \$1.75 per lens that I am awarding is the average of the litigants' proposed reasonable royalty rates. Mirror Lite proposed a \$2.50 per mirror reasonable royalty. Rosco's reasonable royalty was proposed as a total of the weighted average of a design around cost plus allocated tooling costs. I converted Rosco's proposed total into a single reasonably royalty amount per lens, and that came to \$1.00 per lens.²¹ I am awarding Mirror Lite a reasonable royalty of \$1.75 per lens.

Rosco's Pre-Trial Infringement

²¹ Rosco's numbers may be converted into a single rate per lens as follows:
\$0.58 * 90,000 = \$52,200 design around for pre-trial infringing mirrors
\$0.58 * 137,339 = \$79,656.52 design around for post-trial infringing mirrors
\$52,200 + \$79,656.52 + \$96,250.00 (allocated tooling costs) = \$228,106.52
Dividing the sum of the design around costs plus tooling costs by the total number of infringing mirrors \$228,106.52 / 227,339 = \$1.00 Which gives Rosco's proposed per lens reasonable royalty rate of \$1.00.

In my earlier decision, I found that Rosco sold 90,000 units of infringing mirrors from 1996 until the trial in March, 2000.

Rosco's Post-Trial Infringement

Mirrors 3 and 4

In my August 6, 2007 decision, I found that mirrors 3 and 4 infringed Mirror Lite's '984 patent. See *Rosco*, 506 F.Supp.2d at 155. I now find that between March 2000 and December 31, 2006 Rosco sold 56,020 mirror 3 units and 81,319 mirror 4 units, a total of 137,339 infringing mirrors. (Rosco's Proposed Findings of Fact and Conclusions of Law, p. 14 ¶ 60.) In addition, I find that Rosco no longer sells either mirror 3 or mirror 4, and stopped selling both mirrors in 2004. (*Id.*, ¶ 59.)

Mirrors 1, 2 and 5

In order to decide whether Mirror Lite is entitled to damages for mirrors 1, 2 and/or 5, I determine first whether any of these mirrors infringe Mirror Lite's '984 patent.

Mirror Lite's Motions to Strike Evidence

Mirror Lite has made motions to strike all of Rosco's evidence concerning the bisecting test and the template test, in addition to a motion to strike Professor Folan's testimony on "Patent Matters." Because a court may consider only admissible evidence, I determine first whether the testimony of Professor Folan and the evidence concerning the bisecting and template

tests are admissible. See Fed. R. Evid. 702; *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 597, 113 S.Ct. 2789, 125 L.Ed.2d 469 (1993) (assigning the trial judge the role of gate keeper in determining admissibility of expert testimony and related evidence).

Motion to Strike Professor Folan's Testimony

Mirror Lite argues that Professor Folan doesn't have, "the requisite background, training or experience to render opinion as to the scope and content of patents." (Mirror Lite's Mot. to Strike Test.) Therefore, Mirror Lite requests that this Court strike any of Prof. Folan's testimony where he offers any opinion as to the "scope and contents of patents." *Id.* Rosco opposes this motion and argues that Prof. Folan's testimony was offered not as a patent expert, but as an expert on physics, optics and measurements. (Tr. II 792, 793.)

Mirror Lite cites only one page in the entirety of the trial transcript (Tr. II 796) where it contends Prof. Folan offered his opinion on the scope of the patent. *Id.* Mirror Lite's attorney objected to Prof. Folan's testimony on this same basis three times during direct examination. (Tr. II 788, 789, and 796.) During trial, I ruled on each objection. The first time Mirror Lite objected, I overruled the objection stating that this Court, not Prof. Folan, would determine the legal issues concerning infringement. (Tr. II 789.) The second objection was overruled

again on the ground that I was not receiving Prof. Folan's testimony on the issue of validity and scope of the patent²². (Tr. II 796.) The third time Mirror Lite objected, I stated that this Court is not, "interested in conclusions he [Prof. Folan] has about whether something does or does not infringe." (Tr. II 800.)

Prof. Folan's opinions and conclusion were based on the application of his expertise to the legal issues in this case, which are decided by the Court. Prof. Folan testified that his experience would allow him to, "comment on how effective particular measurement approaches would be to measuring the parameters of interest." (Tr. II 791.) Prof. Folan's opinions on the '984 patent were given in his capacity as an expert in optics, physics and measurements, and are therefore admissible. (Tr. II 787-793.)

Motion to Strike the Mirror Bisecting and Template Tests²³

Mirror Lite moved to strike all testimony, exhibits and other evidence concerning Rosco's bisecting and template tests. Mirror Lite contends that neither test is admissible under the

²² Validity and scope of the '984 patent have been decided in previous decisions in this case.

²³ For a description of the tests, see my August 6, 2007 Memorandum Opinion and Order in this case, *Rosco Inc. v. Mirror Lite Co.*, 506 F.Supp.2d 137, 144, 147 (E.D.N.Y. Aug. 6, 2007).

standard set out by the Supreme Court in *Daubert v. Merrell Dow Pharmaceuticals, Inc.* 509 U.S. 579, 587-89 (1993). Mirror Lite also argues that since the Federal Circuit remanded this case with instructions that infringement be decided on the "existing record," I cannot consider any evidence relating to infringement that was not on the record at the time the Federal Circuit issued its mandate. (Mirror Lite's Mot. to Strike Evidence concerning Bisection Testing and Template Testing.)

At trial, I addressed Mirror Lite's argument that no tests other than a spherometer test should be considered by this court. I stated:

"[T]his trial is on a different issue [than the trial in 2000]. This is the issue of infringement subsequent to the [first] trial which has come up in connection with damages. I don't know that you're confined to the method that was used in the prior trial. You can cross-examine the witness as to any inconsistency you see between the testing now and the testing earlier, but I don't think its appropriately excluded."

(Tr. II 624.) Courts of appeal are courts of limited jurisdiction, they may only decide issues presented to them on appeal, and not issues which may come up in the future, which is the case here. *Engel Industries, Inc. v. Lockformer Co.*, 166 F.3d 1379, 1382 (Fed.Cir. 1999). The mandate issued by the Federal Circuit applied to pre-trial infringement, as that was the issue before it. The Federal Circuit was not ruling on infringement subsequent to the trial in 2000. Therefore, I

appropriately allowed testimony on tests other than a spherometer at the trial.

Mirror Lite also argues that neither of these tests should be admitted because new tests for showing infringement were not part of the limited discovery I permitted in my previous decisions.²⁴ Clearly, however, infringement falls within my first discovery order, "whether . . . Rosco continued to sell [infringing] Hawk Eye and [infringing] Mini Hawk Eye mirrors post-trial." Rosco was selling five different mirrors under the Hawk Eye and Mini Hawk Eye trade names, so it was necessary for there to be evidence presented as to whether each of the five types of mirror being sold infringed Mirror Lite's '984 patent. And, since this was about post-trial infringement, my order permitted Rosco to garner new evidence in support of its argument that none of its post-trial mirrors infringed.

This is Mirror Lite's second motion to strike the bisecting test. Mirror Lite first moved to strike the bisecting test along with its motion for summary judgement of infringement filed in 2007. I denied Mirror Lite's first motion on the ground that the declaration of Peter Sinclair, whom I qualified as an expert in general mathematics, properly supported the admissibility of the

²⁴ Specifically, I ordered limited discovery on two issues: "(1) whether and to what extent Rosco continued to sell Hawk Eye and Mini Hawk Eye mirrors post-trial; and (2) post-trial revenue, costs and profits Rosco has earned or incurred through sale or manufacture of Hawk Eye and Mini Hawk Eye Mirrors." (Memorandum Opinion and Order, Sept. 26, 2006.)

bisecting test, and that the test itself was properly conducted and appropriately grounded in Mr. Sinclair's expertise. *Rosco Inc., v. Mirror Lite Co.*, 506 F.Supp.2d 137, 144 (E.D.N.Y. Aug. 6, 2007). In that same opinion, I also ruled that the bisecting test met the standards set out by the Supreme Court in *Daubert*. 509 U.S. at 587-97. However, Mirror Lite argues that the test should not be admitted because Rosco did not offer Sinclair as a witness at trial. This leaves the bisecting test without the substantiation of the expert who conducted the test.

Two of Rosco's trial witnesses discussed the bisecting test, Ben Englander and Prof. Folan. Ben Englander testified at trial how the bisecting test was conducted because he observed the test while Mr. Sinclair conducted it. (Tr. II 661.) Prof. Folan was qualified at trial as an expert in measurement, optics and physics, and is qualified to explain the test results. (Tr. II 792.)

Mirror Lite argues that the bisecting test is not admissible under the standards set out in *Daubert*. 509 U.S. at 587-97. The first step in determining the admissibility of expert testimony is to determine whether the witness has the requisite qualifications. See *Zaremba v. Gen. Motors Corp.*, 360 F.3d 355, 360 (2d Cir. 2004) (describing an analysis of the reliability of the witness's methods as "superfluous" where the witness lacked qualifications). As stated above, Prof. Folan was qualified at

trial as an expert in optics, physics and measurements. The bisecting test is a test devised to measure a radius of curvature. As an expert in measurement, Prof. Folan is qualified to offer his opinion on this test.

The second step in evaluating the admissibility of expert testimony is determining whether it rests on a reliable foundation. *Daubert*, 509 U.S. at 597. The Supreme Court has identified a number of factors that may be relevant to the reliability of testimony, including: (1) whether the theory or technique has been or will be tested; (2) whether it has been subjected to peer review and publication; (3) the known or potential rate of error; and (4) whether the technique or theory has gained general acceptance in the relevant expert community. *Id.*, at 593-94. In addition, a proponent of expert testimony bears the burden of showing "a grounding in the methods and procedures of science which must be based on actual knowledge and not subjective belief or unaccepted speculation." *Mitchell v. Gencorp, Inc.*, 165 F.3d 778, 780 (10th Cir. 1999).

Ben Englander's observations of the test show that the methodology in carrying out the bisecting test is sound. (Tr. II 628.) Prof. Folan's evaluation of the data derived from the bisecting test and his explanation of how the test was conducted is grounded in his knowledge of physics, optics and measurement. (Tr. II 805-808.) Prof. Folan satisfactorily explained the

potential for error in this test introduced when the lens was cut and also when the lens was traced on paper. Mirror Lite has shown no reason why its expert could not and did not replicate the mirror bisecting test and evaluate the test's technique, theory, potential for error and results. I therefore find the bisecting test reliable and admissible.

Mirror Lite also moves to strike the template test. Mirror Lite argues that this test does not meet the standards set out by *Daubert* and should not be admitted into evidence. Ben Englander testified as to how the template test was conducted. (Tr. II 625.) Prof. Folan reviewed the testing procedure and results and came to a conclusion about attributes of the radii of curvature of the mirrors being tested. (Tr. II 800-805.)

Here, too, Ben Englander's observations of the test show that the methodology in carrying out the template test is sound. (Tr. II 625.) Prof. Folan's evaluation of the data derived from the template test and his explanation of how the test was conducted is grounded in his knowledge of physics, optics and measurement. (Tr. II 805-808.) Mirror Lite has shown no reason why its expert could not and did not replicate the mirror bisecting test and evaluate the test's technique, theory, potential for error and results. I therefore find the template test reliable and admissible.

Mirror Lite argues that Rosco mirrors (1) the Lexalite made, injection molded, Mini Hawkeye mirror; (2) the Lexalite made, injection molded, Hawkeye mirror; and (5) the Replex made, thermo-molded, Hawkeye mirror, have radii of curvature that decrease along the major axis from the intersection with the minor axis to the perimetral edge and thus are products which infringe Mirror Lite's '984 patent. Rosco argues that mirrors 1, 2, and 5 have constant radii of curvature on their major axes, described in three patents issued to Rosco since 2001, and therefore do not infringe on Mirror Lite's '984 patent.

The patentee has the burden of proving infringement by a preponderance of the evidence. See, e.g., *Conroy v. Reebok Int'l, Ltd.*, 14 F.3d 1570, 1573 (Fed.Cir. 1994). This means that the patentee has to show that it was more likely than not that the mirrors in question infringed the '984 patent. Infringement is a two-step process. The first step is to determine the meaning and scope of the asserted patent claims. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed.Cir. 1995). I have already ruled on the claim interpretation of claim 1 of the '984 patent. See, *Rosco, Inc. v. Mirror Lite Co.*, 506 F.Supp.2d 137, 154 (E.D.N.Y. Aug. 6, 2007). The second step in an infringement analysis is to compare the accused device with the patent's claim language. *Kraft Foods, Inc. v. International Trading Co.*, 203 F.3d 1362 (Fed. Cir. 2000). Infringement is

found when all the elements of the patent claims are found in the accused device. *SEB S.A. v. Montgomery Ward & Co., Inc.*, 77 F.Supp.2d 399 (S.D.N.Y. Nov. 23, 1999).

Thus, the question is whether mirrors 1, 2 and 5 contain the limitations imposed by claim 1 of the '984 patent, specifically whether the mirrors' major axes have, "a varying radius of curvature, which radius decreases from the intersection with the minor axis to the perimetral edge." ('984 patent, column 4, ll. 29-31.) For the reasons discussed below, Mirror Lite has not shown that mirror 1, 2 and 5 have a varying radius of curvature within the meaning of the '984 patent, and I find that the mirrors in question do not infringe.²⁵

There were three infringement tests introduced at trial, the spherometer test, the bisecting test and the template test. The spherometer test was introduced by Mirror Lite, while the bisecting and template tests were introduced by Rosco. Because Mirror Lite's spherometer test did not provide sufficient proof of infringement, I do not discuss the infringement tests offered

²⁵ For the first time, Mirror Lite argues in its post-trial submissions (post-2008 trial), that if literal infringement of mirror 1,2 and/or 5 is not found, then the court may still find that the mirrors infringe the '984 patent through the doctrine of equivalents. I decline to consider this argument as its proffer is untimely. (See my pre-trial orders.)

by Rosco²⁶.

*Spherometer*²⁷

Test

At trial, Mirror Lite introduced spherometer tests performed by Prof. Howell as its sole proof of Rosco's continued infringement of the '984 patent by manufacturing and selling mirrors 1, 2 and 5. Rosco opposes Prof. Howell's testimony and evidence given on spherometer testing on the ground that Prof. Howell's conclusions are unreliable pursuant to Federal Rule of Evidence 702 ("Rule 702"). Rosco argues that Prof. Howell's conclusions are not based on actual facts or data and his tests do not control for known sources of error (or, in the terms of Rule 702, Rosco questions whether the method Prof. Howell's used to perform the test was reliable).

As noted above, there are two steps in ensuring that expert testimony is reliable and relevant. A judge must first determine whether the expert witness has the necessary qualifications and then determining whether the expert's methodology is reliable.

²⁶ The two infringement tests offered by Rosco, the mirror bisecting test and the template test, are each discussed in detail in my Memorandum Opinion and Order dates August 6, 2007.

²⁷ As explained in previous decisions in this case, a spherometer is a mechanical instrument used to measure the curvature of a surface, by measuring the surface's deflection, and then using the deflection measurement to calculate a radius of curvature. It has two legs and a movable central post between the two legs, which measures the deflection. Before use, a spherometer is adjusted on a flat surfaces that the face reads zero. The major and minor axes are identified, as is their intersection point. The spherometer is then placed at the intersection and moved along the major axis to the lens' perimetral edge. Deflection measurements are shown on the spherometer's face as the instrument is being moved along the axis.

Zaremba, 360 F.3d at 360.

Federal Rule of Evidence 702 provides:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

An expert's methodology is reliable when his testimony is grounded in sufficient facts or data, he employed reliable methods and principles, and he has applied the principles and methods reliably to the facts of the case. FED. R. EVID. 702.

Prof. Howell is an expert in mechanical engineering, design, manufacturing and mechanical instrumentation and experimentation. Tr. II 42; see also *Rosco*, 506 F.Supp.2d at 148. The issue is whether Prof. Howell's methodology in conducting the spherometer tests was sound, and whether his testimony was based on sufficient facts or data. FED. R. EVID. 702. I find that Prof. Howell's methodology was reliable. However, since Prof. Howell did not control for identifiable sources of possible error due to human use and mechanical construction of the spherometer, I find that Mirror Lite has not proven by a preponderance of the evidence that mirrors 1, 2 and 5 infringe the '984 patent.

A spherometer is a simple mechanical device which measures deflection with a high degree of precision that is subject to inaccuracy due to the introduction of physical human contact with the device in its use²⁸. (Tr. II 734-35, 783-84, 809-10.) If the spherometer's two legs and center post are not resting on their tips, then the spherometer's face would show an incorrect measurement of deflection for the point which it is measuring. In addition, if the major axis is not adequately marked, then the measurement on the face of the instrument may not be the measurement of the major axis. The spherometer is, therefore, very difficult to use accurately. If the user's hand moves slightly, that will result in uneven, rather than consistent pressure, which results in a change in the deflection measurement displayed on the spherometer's face. (Tr. II 734-35, 783-84, 812-13.) In addition, rocking (tilting) the spherometer even slightly would result in a change of pressure on the instrument's post which would reflect an inaccurate reading. (Tr. II, 248, 627, 734, 993-94.) Therefore, the spherometer's measurement results may not be accurate in light of the high degree of operator error that may be involved. (Tr. II 244-45, 627, 734, 811-13.) It is also important to secure the mirror in

²⁸ I want to take this opportunity to define (and differentiate) between the meanings of the words precision (or precise) and accuracy (or accurate). Accurate is an adjective that means "free from failure, error or defect." Webster's New International Dictionary 17 (2d ed. 1959). Precise is an adjective that means "having determinate limitations." Webster's New International Dictionary 1944 (2d ed. 1959).

place to prevent the mirror from moving as the spherometer is being moved along the major axis, because this motion will cause an inaccurate spherometer reading. (Tr. II 812.)

Prof. Howell used a spherometer to measure the radius of curvature of each mirror. (Tr. II 44-47, 55-58, 60-64, 66-80.) He observed a decrease in radius along the major axis of each mirror he tested. *Id.* He performed the tests twice.²⁹ The first time he placed each mirror on a grid of horizontal and vertical lines, and used that grid to find the major axis "very carefully." (Tr. II 45, 66-70.) He then moved the spherometer across the reflective surface of the mirror. *Id.* Each time, Prof. Howell performed the test, he observed a decrease in the radius of curvature along the major axis. (Tr. II 44-47. 55-58, 60-64, 66-80.) Prof. Howell testified that he performed all his tests a second time, marking the major axis of each mirror with a marker. (Tr. II 47, 66-71.) Prof. Howell again observed that each mirror's radius of curvature decreased along the major axis. (Tr. II 47, 66-74.) Prof Folan offered numerous criticisms of Prof. Howell's approach to spherometer testing. However, the existence of an alternative and more careful approach to performing a test does not make Prof. Howell's approach

²⁹ Prof. Howell tested 24-30 additional mirrors between the time of his deposition and the trial. (Tr. II, 78-79; Mirror Lite Trial Ex. GL-1, GL-2.) However, the procedures used to test these additional mirrors and the results obtained were never introduced at trial.

unreliable. FED. R. EVID. 702, notes to 2000 Amendments ("When a trial court, applying this amendment, rules that an expert's testimony is reliable, this does not necessarily mean that contradictory expert testimony is unreliable"); *See, e.g., Heller v. Shaw Industries, Inc.*, 167 F.3d 146,160 (3d Cir. 1999). Prof. Folan stated that eyeballing is a very poor approach to finding the major axis on a mirror lens. "The devices have a dial which you are supposed to view, and, at the same time, to view the major axis, you should be standing facing down over the major axis, and so, from that viewpoint, you cannot see the dial." (Tr. II, 818.) Prof. Howell also did not take any precautions to ensure that the instrument was held vertically at all times, that even pressure was applied at all times, or that the mirror remained in place at all times, all factors that go to the weight of his testimony, but that do not make his test results unreliable. (Tr. II, 45-46, 66.)

Prof. Howell did not record the spherometer measurements nor did he record the magnitude of decrease of the radius of curvature for any mirror. (Tr. II, 73, 91,104, 111, 988.) Mirror Lite argues that records were not necessary in this case because the patent claims do not specify any quantified value for the decrease in radius of curvature. Rather, the claims only specify that there has to be "some decrease in the radius of curvature along the major axis (regardless of the magnitude of

such decrease), the scope and meaning of claim 1 is met and the benefits and purposes of the '984 [p]atent are achieved."

(Mirror Lite's Post Trial Br. 11-12.) While I agree with Mirror Lite's contention that claim 1 of the '984 patent does not quantify a decrease in radius of curvature, recording test results during the course of scientific testing does lend credibility to the results, especially where a witness does testify to a quantification of the results. It is hard to believe that Prof. Howell remembered all the mirrors he test had a deflection reading on the face of the spherometer close enough to show a similar decrease in radius of curvature - especially since Prof. Howell was observing the face of the spherometer as the deflection reading (and not as a measurement of radius of curvature) changed while he passed the instrument along the major axis of the mirror.

At trial, each of the five mirrors tested by Mirror Lite was marked into evidence. Each had a major axis that was marked. (Tr. II 47, 58-59.) The five mirrors introduced by Mirror Lite at trial all had many scratch marks along, next to and crossing the major axis, which Prof. Howell cannot explain, and which he testified were not present when he tested the lenses. (Tr. II 781-82, 1017.) Ben Englander remarked that scratches such as those on the five mirrors cannot be made by a spherometer unless there is a significant amount of pressure which would cause the

feet of the spherometer to carve grooves in the mirror's acrylic surface.

Prof. Howell's deposition and trial testimony varied with respect to the quantification and value of the decrease in the magnitude of the radius of curvature he observed while performing spherometer tests. In his deposition, Prof. Howell said he did not quantify the results, because he was only testing to ascertain whether there was a decrease in the radius of curvature. (Tr. II 104, 111.) At trial, Prof. Howell said he quantified the results, observing a 0.015 inch decrease in radius of curvature in Rosco's vacuum formed mirrors, and a lesser decrease in the injection and thermo-molded mirrors. (Tr. II, 73-4, 81.) During his rebuttal testimony, Prof. Howell testified that he observed a decrease of a "few thousandths" of an inch. (Tr. II, 974.) Then, during recross examination while on rebuttal, Prof. Howell said that he observed decreases in the range of 0.001 - 0.004 inches. (Tr. II, 1011.)

Aside from Prof. Howell's testimony, however, I find the devised spherometer test difficult to perform accurately. FMVSS 111 gave ten points on a convex mirror lens to test. FMVSS § 111(12.3). The FMVSS regulations do not mention sliding a spherometer across the major axis. In fact, the regulations state that at each test point, the spherometer must be held perpendicular to the convex mirror surface. FMVSS § 111(12.4).

I imagine it would be quite difficult to hold the spherometer completely perpendicular to the lens surface while sliding the spherometer along the major axis of a curved surface, all the while watching the dial reading. (Tr. II 818.) Unequal pressure on the spherometer would change the dial reading.

In sum, due to Prof. Howell's lack of recorded results, inconsistencies within his testimony as to the values of decrease he observed, lack of correction for known potential sources of error and the inherent challenges in accurately performing the devised spherometer test, I find his test results insufficient for Mirror Lite to prove³⁰ Rosco's mirrors (1), (2) and (5) infringed the '984 patent by a preponderance of the evidence.

Damages

Rosco sold 90,000 pre-trial infringing mirrors and 137,339 post-trial infringing mirrors, for a total of 227,339 infringing mirrors. At a reasonable royalty rate of \$1.75 per mirror, Mirror Lite is awarded \$397,843.25 for Rosco's sales of mirrors which infringe the '984 patent.

Conveyed Sales and Price Erosion Damages

A patentee may recover lost profits on unpatented items sold

³⁰ Because I find that Mirror Lite has not proved infringement by a preponderance of the evidence, in other words that the spherometer tests do not show that it was more likely than not that mirrors (1), (2) and / or (5) infringed, it is not necessary to discuss Rosco's Template and Bisecting Tests.

with a patented product where there is a functional relationship between the unpatented product and the patented product.

American Seating Co. v. USSC Group, Inc., 514 F.3d 1262 (Fed.Cir. 2008). This is commonly referred to as a convoyed sale. *Id.* Mirror Lite requests an award of lost profits on all the lost convoyed sales it would have made, on items such as mirror mounting hardware, had Rosco not infringed.

The sixth *Georgia Pacific* factor asks the court to consider the "extent of ... convoyed sales" in a reasonable royalty negotiation. 318 F.Supp. at 1120. Since I considered Mirror Lite's lost convoyed sales as a factor increasing the royalty price to be paid by Rosco, Mirror Lite has been compensated for its lost convoyed sales. Mirror Lite may not recover an additional award due to lost convoyed sales.

In order to recover lost profits due to price erosion, a patentee must present evidence to a reasonable probability that the infringer eroded the market price that the patentee was able to charge for his product. *Wechsler*, 486 F.3d at 1294 (patentee needs to show substantial evidence that the infringer eroded the market price); *Lam, Inc. v. Johns-Manville Corp.*, 718 F.2d 1056, 1065 (Fed.Cir. 1983) . Since Rosco's and Mirror Lite's products were on the market contemporaneously, and it was a two-supplier market, there was direct price competition between the products. Therefore, Mirror Lite would need to offer "some evidence tying

the lower price it received" for its infringed mirrors to Rosco's infringing sales, "or that the infringing sales preempted subsequent sales" by Mirror Lite. *Wechsler*, 486 F.3d at 1294.

Mirror Lite attempted to establish at trial that Rosco's presence in the market place eroded the prices at which Mirror Lite was able to sell cross view mirrors. The evidence in this regard is too speculative to support an award of lost profits due to price erosion. Mirror Lite argues that had Rosco not been in the market place, Mirror Lite would have held approximately 95% of the cross view mirror market and sold the lenses at prices higher than the prices Mirror Lite and Rosco both actually charged. Mirror Lite has not met its burden of proving that the market would have borne such a price increase. The testimony of Ben Englander as to the OEM's unwillingness to buy lenses once prices were increased and Mirror Lite testimony on how it lost customers when it increased prices casts considerable doubt on the reasonableness of Mirror Lite's suggestion that it could have successfully raised prices at 3-5% per year. Therefore, Mirror Lite may not recover a damages due to price erosion.

Future Damages

A patentee can recover future damages resulting from future lost sales. *Brooktree Corp. v. Advanced Micro Devices, Inc.*, 977 F.2d 1555, 1581 (Fed. Cir. 1992) ("projected future losses may be recovered when sufficiently supported"). Under this theory of

damages, a patent owner contends that it will lose some amount of future sales as a result of past infringement. See, e.g., *Sun Prods. Group, Inc. v. B&E Sales Co.*, 700 F.Supp. 366, 385 (E.D. Mich. 1988). To prove such damages, the patent owner will look at past sales and sales diverted to the infringer during the period of infringement and project how many future sales it is likely to lose based on the infringer's past infringement. See, *id.*

In *Sun Prod. Group, Inc.*, plaintiff held a patent and trademark on the "Headchair," a foldable head rest, and sold 200,000 units in the first year of production. *Id.* Defendant began marketing and selling the "Heads-Up" head rest during that same year. *Id.* at 372. Once Heads-Up was introduced to the market, sales of Headchair fell drastically. *Id.* at 378-81. Plaintiff brought a suit alleging patent and trademark infringement. Plaintiff sought lost profit damages. *Id.* at 378-82. Defendant opposed these damages on the ground that the products were sold at very different prices to different retailers and ultimately to different consumers, and therefore, sales of Heads-Up could not cause a loss of sales of Headchair. *Id.* at 382. Plaintiff brought in a marketing expert to project future sales of Headchair in a marketplace without Heads-Up. *Id.* The court accepted plaintiff's marketing expert's estimates of future sales and awarded plaintiff future lost profits due to

lost sales for four years after the conclusion of the lawsuit because defendant's act permanently impaired future sales of Headchair and that the "sales momentum and business goodwill which flowed from [plaintiff's] successful first year has, to a great extent, been irreparably lost." *Id.* at 368-87.

The Federal Circuit similarly awarded damages for loss of future sales in a two-supplier market in *Lam*. 718 F.2d 1056. At trial, the plaintiff-patentee produced evidence of its pre-infringement growth, infringement decrease in growth and subsequent increase in growth post-infringement. *Id.* at 1068. The Federal Circuit held that the post-infringement growth rate was admissible evidence to show that the plaintiff would have grown at the pre-infringement growth rate had the defendant not infringed. *Id.* The court ruled that in a two supplier market "an award based on projected lost sales³¹ is neither remote nor speculative when there is evidence of actual pre-infringement and post-infringement growth rates." *Id.*

Mirror Lite did not offer any information as to what its market share would have been had infringement not occurred. (Rosco's Proposed Findings of Fact and Conclusions of Law, pp. 4-5 ¶ 16.) Nor did Mirror Lite offer any information about how the

³¹ The projected lost profits in *Lam* were for damages which continued to accrue after suit was filed and before the final decision was handed down. 718 F.2d 1056.

market was effected upon Rosco's introduction of a non-infringing alternative in 2000. Without this information, Mirror Lite cannot receive an award for future damages.

Enhanced Damages

Mirror Lite requests an award of enhanced damages for Rosco's infringement on the ground that Rosco willfully infringed the '984 patent. See *In re Seagate Tech., LLC*, 497 F.3d 1360, 1368 (Fed. Cir. 2007). It is within a district judge's discretion whether to award enhanced damages as, "[a] finding of willfulness does not require an award of enhanced damages; it merely permits it." *Id.* If patent infringement is found to be willful, the court may increase the damages award to up to three times the amount found or assessed. 35 U.S.C. § 284. Because I find that Rosco did not willfully infringe Mirror Lite's patent, I decline to award Mirror Lite enhanced damages.

"Willful infringement permitting enhanced damages requires at least a showing of objective recklessness." *In re Seagate Tech., LLC*, 497 F.3d at 1371. "[T]o establish willful infringement, a patentee must show by clear and convincing evidence that the infringer acted despite an objectively high likelihood that its actions constituted infringement of a valid patent." *Id.* "If this threshold objective standard is satisfied, the patentee must also demonstrate that this objectively-defined risk ... was either known or so obvious that it should have been

known to the accused infringer." *Id.*

A review of the record indicates that Rosco did not act with objective recklessness. Rather, upon review, Rosco acted reasonably. Rosco could not have acted with objective recklessness because it only sold infringing mirrors during the time I found that Rosco was the valid patent holder and Mirror Lite was the infringer. Rosco stopped selling infringing mirrors prior to my decision that it was the infringer, and Mirror Lite the valid patentee.

Rosco initiated this action against Mirror Lite in 1996, alleging that, among other things, Mirror Lite infringed Rosco's '372 patent. After a bench trial in March 2000, I found the Mirror Lite infringed Rosco's '372 patent. It was only after a remand by the federal circuit that I found, in August 2005, Rosco's '372 patent invalid and that Rosco infringed Mirror Lite's '984 patent. At that time, Rosco was making only mirrors 1, 2 and 5 - mirrors that I find do not infringe Mirror Lite's '984 patent. Rosco has not sold mirror 3 or 4 since 2004. All infringement, therefore, ceased in 2004, prior to my decision that Rosco was the infringer.

CONCLUSION

For the reasons set forth above Mirror Lite is awarded the following damages: \$157,500.00 for pre-trial infringement and

\$240,343.25 for post-trial infringement, for a total of \$397,843.25 in damages against Rosco. Rosco's mirrors 1, 2 and 5 do not infringe Mirror Lite's '984 patent. Mirror Lite's request for future damages and enhanced damages is denied. Mirror Lite's motions to strike evidence relating to the bisecting test and template test, strike Prof. Folan's testimony on patent matters and introduce evidence from pre-2000 that relates to damages post-2000 are all denied. Mirror Lite is entitled to an injunction in the form of its amended proposed injunction with the exception of paragraph 2(b). Mirror Lite is directed to settle judgment on notice.

Mirror Lite may make an application for attorney's fees supported by contemporaneous time records within 14 days of the date of this decision. Fed. R. Civ. P. 54 (d)(2); 35 U.S.C. § 285.

The clerk is directed to transmit a copy of the within to all parties and to the Magistrate Judge.

SO ORDERED.

Dated: Brooklyn, New York
June 17, 2009

By: /s/ Charles P. Sifton (electronically signed)
United States District Judge